



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

SCIENCE

EDITORIAL COMMITTEE: S. NEWCOMB, Mathematics; R. S. WOODWARD, Mechanics; E. C. PICKERING, Astronomy; T. C. MENDENHALL, Physics; R. H. THURSTON, Engineering; IRA REMSEN, Chemistry; J. LE CONTE, Geology; W. M. DAVIS, Physiography; O. C. MARSH, Paleontology; W. K. BROOKS, Invertebrate Zoölogy; C. HART MERRIAM, Vertebrate Zoölogy; S. H. SCUDDER, Entomology; N. L. BRITTON, Botany; HENRY F. OSBORN, General Biology; H. P. BOWDITCH, Physiology; J. S. BILLINGS, Hygiene; J. McKEEN CATTELL, Psychology; DANIEL G. BRINTON, J. W. POWELL, Anthropology.

FRIDAY, SEPTEMBER 27, 1895.

CONTENTS:

<i>The American Forestry Association:</i> F. H. NEWELL	385
<i>Society for the Promotion of Engineering Education.</i>	390
<i>The Second Summer Meeting of the American Mathematical Society:</i> THOMAS S. FISKE.....	394
<i>The Springfield Meeting of the American Association for the Advancement of Science:—</i>	397
Section A. Mathematics and Astronomy: ASAPH HALL, JR. Section E. Geology and Geography: EDMUND OTIS HOVEY. Section G. Botany: B. T. GALLOWAY. Section I. Economics.	
<i>Scientific Notes and News</i>	407
<i>University and Educational News</i>	409
<i>Correspondence:—</i>	411
<i>Alleged Suppression of Discussion:</i> J. McKEEN CATTELL. <i>Examination of the Blood in Disease:</i> JOSEPH F. JAMES.	
<i>Scientific Literature:—</i>	413
<i>Mach's Mechanics:</i> D. W. HERING. <i>Allen's Collection of Mammals from Arizona and Mexico:</i> C. H. M. <i>La sensibilité de l'œil aux couleurs spectrales:</i> E. C. SANFORD.	
<i>Scientific Journals:—</i>	419
<i>The Physical Review.</i>	
<i>New Books</i>	420

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Prof. J. McKeen Cattell, Garrison on Hudson, N. Y.

Subscriptions and advertisements should be sent to SCIENCE, 41 N. Queen St., Lancaster, Pa., or 41 East 49th St., New York.

THE AMERICAN FORESTRY ASSOCIATION.

THE American Forestry Association held its summer meeting at Springfield, Massachusetts, on September 4th and 5th, in connection with the American Association for the Advancement of Science.

The President of this Association, the Hon. J. Sterling Morton, Secretary of Agri-

culture, was prevented by official business from attending, but sent his regards together with expressions of deep interest in the objects of the meeting.

Capt. Francis H. Appleton, Vice-President, from Massachusetts, presided and opened the session by a brief address detailing the condition of forestry in Massachusetts and referring to the action of the State Board of Agriculture through its Forestry Division. The first business was the appointment of Messrs. Fernow, Higley, Moses, Walker and Appleton as a Committee on Resolutions to report at the end of the session. The Hon. G. F. Talbot, of Maine, made an address in which he advocated that all worthless lands forfeited by tax sales be permanently held by the State and devoted to the purpose of the production of trees, such lands being admirably adapted to this end. He spoke of the fire laws of Maine and stated that the adverse interests of forest owners was the great obstacle to any reform in the proper control. Under a sharp competition the land was stripped of everything salable and the refuse left where it happened to fall, thus ultimately becoming through its inflammability a menace to all neighboring property.

Mr. George H. Moses, Secretary of the New Hampshire Forestry Commission, reviewed the history of legislative attempts to provide suitable protection to the forests, and spoke of the creation of the present

Commission organized to investigate the extent and character of the forest cover, the removal of lumber, the annual receipts and the general relation of forests to climate, water and health. They are empowered simply to investigate, but much of their energy has been given to attempts to convince the lumber men that it is for their personal interest as well as that of the State to introduce less wasteful and destructive methods. They are also striving to preserve some of the natural beauties of the White Mountain region, as the summer resorts, if destroyed or injured, will cause great annual loss to the State.

Mr. Joseph B. Walker, of Concord, New Hampshire, followed with a description of the present condition of the forests, especially those in the northern portion of the State. Here large areas are owned by individuals whose sole object is to make the most money in the shortest period, and who have no interest in obtaining a future crop of trees. Everything is cut which can be sold, either for lumber or matches. Vast sections are denuded one after the other, the fires in the 'slashings' sweeping the ground clean after the lumber men have left. There is a beginning, mainly from the sentimental side, to make an attempt to prevent this great destruction, and the fire laws have been so improved that the Selectmen or County Commissioners are required to appoint fire wardens, whose duties include the watching for fires and the summoning of aid to prevent their spread. No penalty for failure is provided, but popular sentiment is being aroused to such an extent as to render the law generally effective. The farmer is beginning to appreciate the necessity of the forests, as these if properly managed will furnish him opportunity for labor during the winter months. At present he labors seven months of the year and from his farm alone cannot derive revenue for the remaining five months.

Rev. Julius H. Ward, of the editorial staff of the Boston *Herald*, read a paper on the present situation in the White Mountains. He noted the increased regard being expressed by lumbermen for the young trees which ultimately should become valuable for lumber. He described the ordinary operations and stated that the companies now at work in the White Mountains expected to cut everything before them, not leaving a stick of any value.

Mr. Charles Eliot, of the firm of Olmstead & Eliot, of Brookline, Mass., read a paper on the new public forests near Boston, illustrating this by maps of the locations of these forests, and described their general characteristics. The most important of these public reservations is the Blue Hills area, consisting mainly of rugged hills and swamps. Next in importance are the Middlesex Falls, and besides these are numerous smaller localities notable for the beauty of their scenery. The chief enemy to these is fire, and to guard against this, the larger reservations are blocked out into fire districts, and watchmen employed to patrol the grounds.

Mr. E. H. Forbush, Director of Field Work of the Gypsy Moth Department of the Massachusetts Board of Agriculture, spoke of the work in confining this insect pest within certain limits. It originated in specimens imported by an entomologist, these escaping and multiplying until the trees and bushes within many towns were destroyed as completely as by fire. By means of sufficient appropriations it would be possible to exterminate this insect, but Massachusetts has only granted a sum sufficient to hold it in check. Thus there is constant danger that the moth may escape and start new colonies in every direction. If allowed to spread it may overrun the whole country. He stated that the native birds will not eat the eggs of this insect, but that possibly some foreign birds which

eat the eggs in their own country might be imported.

Mr. Cornelius C. Vermeule, of the New Jersey Geological Survey, read a paper upon forests and rivers, this relating mainly to the conditions within the State of New Jersey, reference being made to data from Massachusetts, New York and Pennsylvania. In his conclusions he stated that the river measurements failed to indicate any notable effect of forests upon evaporation or upon the very highest or lowest rate of flow. The measurements do show what is quite as important, namely, a more equable flow, fewer floods, and shorter periods of extreme low water upon well forested catchments. Some of Mr. Vermeule's conclusions were called in question by Mr. Fernow as not being applicable beyond the areas studied.

Hon. Warren Higley, of New York, spoke of the progress of legislation in his State, and described the inception and growth of the Adirondack Park. The lands within the Park limits are being acquired by the State through tax sales or by purchase, excepting such as are owned or controlled by clubs or corporations whose interests in forest protection are identical with those of the State. It was the original intention to manage this Park upon rational principles and dispose of the ripe trees for timber wherever this could be done without injury, but the Constitutional Convention adopted a provision against the sale of any timber upon lands owned or to be acquired by the State, the people thus putting themselves upon record as being able to buy and maintain these forests without the aid of revenue from the sale of forest products.

Colonel William Fox, Superintendent in charge of the State Forests, briefly described the organization of the Commission under which he was employed, and stated that it was the intention to purchase 80,000 acres as soon as possible. The forests could un-

doubtedly be improved by cutting, but since this was prohibited by the Constitution, a rational system of forestry must be held in abeyance for the present.

Prof. J. C. Smock, State Geologist of New Jersey, stated that some of the largest land holdings in that part of the country are in southern New Jersey. The Geological Survey is performing, to a certain extent, some of the functions of a forest commission and is making examinations as to the relation of forests to water supply and sanitary conditions. The agricultural interests are as a rule subordinate in New Jersey to the question of water supply, especially in the northern part of the State, where are situated the great metropolitan districts. For the southern part the main source of anxiety is the forest fires, one of these alone having burned over and destroyed probably a million dollars' worth of lumber and other property. Such a fire leaves only the bare white sand, destroying even the soil.

Baron Beno Reinhardt von Herman, Chamberlain to the King of Würtemberg, Forestry Councillor and at present Attaché Forestry and Agriculture to the German Legation, read a brief address upon forestry management in Germany, and spoke of the special education of the foresters in colleges devoted to this purpose, and their subsequent training by practical experience in the woods.

The remaining papers on the program for Tuesday were not read owing to the absence of their authors. Adjournment was taken till Wednesday, September 4th.

On Wednesday morning, September 4th, the session was called to order by Vice-President Appleton, the first paper being by Mr. T. S. Gold, Secretary of the Board of Agriculture of Connecticut. He spoke of the causes tending to re-establish wood growth in his State, these being mainly the decrease of profit in wood cutting, owing to the extinction of the iron furnaces. Many

trees are being set by the roadside and the State has enacted legislation protecting such trees. Spikes having the letter 'C' in the head are to be provided, and when driven into one of the roadside or shade trees this spike must not be removed even by the owner, and any destruction or injury to the tree is punishable by heavy penalty. The drought of the past year has destroyed many trees, especially the chestnut, resulting in widespread injury to woodlands.

Dr. B. G. Northrop, of Clinton, Connecticut, described the interest shown in Arbor Day in the Hawaiian Islands and in Japan, at the time of his visit to those countries. In Japan the Emperor's birthday has been designated as Arbor Day, memorial trees being planted in his honor. Great enthusiasm was expressed and interest shown in the reclamation of sea coast and the planting of the sand dunes.

A letter from the Hon. J. Sterling Morton, President of the Association, was read. This called attention to the necessity of urging upon the State legislation compelling the proper care of waste from timber cutting in order to prevent forest fires. Mr. Morton also wrote of the necessity of bringing about coöperation between the United States Geological Survey and the Forestry Division of the Agricultural Department, in order that during the preparation of the topographic map the forest areas might be properly represented. He showed that by slight additional expense it would be possible for an expert to classify the woodlands while the map was being made, and obtain the material for a report upon the condition and value of the forests, and the steps to be taken for the proper protection or treatment of these resources. By this means the completed map would show not only the altitude and slopes of the country, the roads, trails and improvements, but also the character and extent of the timber.

Mr. F. H. Newell, Secretary of the Asso-

ciation, spoke of the progress of the great map of the United States now being prepared by the United States Geological Survey, and described the methods of representing wooded areas, dwelling upon the benefits which would follow the more accurate designation of timber lands. By suitable coöperation of the Agricultural Department, it might be possible to concentrate efforts upon the areas covered by the national forest reservations and complete the mapping and description of these within a few years. Remarks were made by Messrs. Talbot, Moses, Elwyn, Pinchot, Smock and others, showing the inaccuracy of the present information concerning the forests and the difficulties of obtaining exact facts through local officials.

Mr. George T. Powell, of Ghent, New York, spoke upon the benefit to the farmers of the preservation of forest areas. He stated that too many unproductive acres were now cultivated, and that in the Eastern States often the cost of production exceeded the value received. By tilling a smaller number of acres with greater care, and devoting the poorer lands to the growth of timber far larger results might be obtained.

At this point Mr. Appleton resigned the chair to Hon. Warren Higley, Vice-President for New York. A discussion was entered into as to the necessity and value to this Association of a forestry journal. This was participated in by Messrs. Fernow, Newell, Talbot, Ward and Pinchot, the general opinion being that such a journal was highly desirable, provided the editorial and business management could be undertaken by any competent person. On motion of Dr. G. B. Northrop the matter was referred to the Executive Committee, with power to act.

Mr. B. E. Fernow, Chief of the Forestry Division, at the beginning of the afternoon session made a statement as to the progress

in National forestry legislation and reviewed the history of attempts made in the past to secure passage of bills endorsed by this Association.

Mr. R. U. Johnson, of the *Century Magazine*, then spoke of the action of the New York Board of Trade and Chamber of Commerce, and urged the advisability of endorsing the resolution of that body calling for the creation by Congress of a Forestry Commission, consisting of three persons empowered to examine into the forest conditions of the country.

Mr. Gifford Pinchot then read a paper upon the present condition of the National forests and the necessity of action in protecting these. He held that since past efforts of this Association had been in a large degree ineffectual, that the proper method of procedure was through a Forest Commission such as that proposed by Mr. Johnson. His views were strongly controverted by Mr. B. E. Fernow on the ground that the time was ripe for action rather than for investigation, and that Congress would be more likely to consider legislation already discussed during the past session rather than to take a backward step in the appointment of a Commission. The matter was urged by Messrs. Johnson and Pinchot, and under a suspension of the rules the following resolution was adopted:

Resolved, That we, this Association, join with the New York Chamber of Commerce and Board of Trade in hearty advocacy of the establishment of a Forestry Commission of three members to make a thorough investigation of the public forest lands and to make recommendations concerning their disposition and treatment, and the Executive Committee is hereby directed to represent the Association in support of such legislation.

Prof. Dwight Porter, of the Massachusetts Institute of Technology, read a paper upon the fluctuations of water supply in Con-

necticut river and the possible connection between these and forest removal. His general conclusion was that as far as the flow of the lower river is concerned there is no proof of permanent injury through cutting of the forests at the head waters. Mr. Talbot called attention to the fact that taking the basin as a whole there might be at present as much growing timber as formerly since on this point there are no statistics available.

Mr. Leonard W. Ross, of Boston, read a paper upon seacoast planting as practiced on the Province lands of Cape Cod, and described the attempts being made to prevent the shifting sands at the extremity of Cape Cod from injuring the settlements and harbor. He spoke of the various kinds of grasses and shrubs which have been planted to hold the sands, and of the results attained, and exhibited specimens showing the cutting of the twigs due to the sand carried by the wind.

Mr. H. C. Bliss, of Springfield, Massachusetts, read a description of methods of planting trees in the vicinity of his city. He has planted an average of 100 trees a year for over twelve years, and has had great success in thus adding to the beauty of the various streets. He described his methods and offered many practical suggestions.

Mr. John M. Woods, of Boston, Mass., described the changes in the hard wood trade during the past thirty years, and spoke of the uses of the more valuable of the ornamental woods native in the eastern and southern parts of the United States.

Hon. G. F. Talbot presented a formal invitation from the Governor of Maine and the Mayor of Portland, inviting the Association to hold a meeting at Portland, Maine, during the next summer. Invitations were referred to the Executive Committee for action.

The Committee on Resolutions then made its formal report, and the following resolu-

tions were adopted paragraph by paragraph, after which the Association adjourned:

Resolved, That the American Forestry Association learns with satisfaction of the recent enactment of laws for the protection of forest property against destruction by fire in Wisconsin and Minnesota, and of the successful operation of such laws in Maine, New Hampshire and New York, deprecating at the same time the continuance of forest destruction by fire in other States and especially on the public domain.

That the question of dealing with forest fires is still the first and most important one to be settled in nearly all the States of the Union before rational forestry methods can become practicable.

That inasmuch as forestry property is taxed for the support of government, it has the same right to consideration and protection as other property and that the Legislatures of the different States which have no efficient forest-fire laws are recommended to provide the same.

That the policy of establishing forest reservations and parks is to be encouraged, and for this purpose it is recommended that timber lands offered for sale for non-payment of taxes be acquired by the State and held to form the nucleus of State forest reservations.

That it is the first duty of Congress in regard to the public timber lands to enact proper legislation for the National protection and administration of the forest reservations and unreserved timber lands, and we appeal to the Public Lands Committees of the Senate and House of Representatives to secure the passage of bills which received the sanction of the Senate and House of Representatives in the 53d Congress, and failed to become laws only for lack of time for consideration of amendments in conference.

That the American Forestry Association, recognizing that a practical advance in

rational forestry methods requires the services of men trained in forestry practice, indorse the legislation proposed in the last Congress by Mr. Hainer, and expresses the hope that the same will be enacted during the coming Congress.

That the knowledge of the extent and conditions of our forest resources is a necessary basis for intelligent forest legislation, and that therefore the American Forestry Association recommends the coöperation of various government departments as far as practicable in ascertaining these areas and conditions, and especially recommends that both a topographic and forestal survey of National Forest Reserves be instituted.

F. H. NEWELL,
Corresponding Secretary.

WASHINGTON, D. C.

SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION.

THE second annual meeting of the Society for the Promotion of Engineering Education was held at Springfield, Mass., on Sept. 2, 3 and 4. This Society was organized in 1893 at the close of the session of the educational section of the International Engineering Congress, whose proceedings were published in the first volume of its transactions. It had 156 members at the close of the meeting held in Brooklyn in 1894. The sessions of the Society are largely devoted to the discussion and reading of papers, nearly all the business being transacted by a Council composed of 21 members, selected from 21 different engineering colleges.

The President of the Society, Professor George F. Swain, opened the first session with an address on the relation between mental training and practical work in engineering education. He alluded to the strong tendency toward practical engineering work as often dangerous in preventing a thorough educational development. The opinions of the public and of some engineers are often